## Methodology and Assumptions

One way to measure an economy is to study its employment patterns. Employment rates, wages, and existing job sectors can be used to describe the health of an economy. Employment diversity can help an economy weather the inevitable booms and busts of any given industry, but diversity alone does not raise the standard of living. Permanent, year-round, well-paying jobs are an essential component of a strong economy. Other measures often used to assess the stability and potential of an economy include availability of capital and the ability to provide the public infrastructure needed to attract new businesses.

This Economic Linkages Model Analysis measures how the economies of the study area are linked to the Forests through employment. The total study area of this social-economic assessment includes all of the eighteen counties in which the Forests exist, including two Colorado counties and two counties in Utah with large population and large employment bases. The Colorado counties were eliminated from the economic linkages analysis because of a lack of information and because Mesa county is a large regional economic center with a population over 100,000. In the State of Utah, Utah County and Washington County were eliminated from the analysis. Both counties have large populations and each has a large, diversified industrial and employment base. In these four counties the National Forests have virtually no direct effect on the employment and to include them in the analysis would skew the results for the other counties in the study area. The resulting "Impact Area" consists of the counties in Central and Southern Utah that have a significant economic linkage to the National Forests.

The data were collected at the Forest level and then were aggregated to the Impact Area level. The data were constructed to give an idea of how important National Forests are to Utah's rural economy. Given the collected data on grazing, timber and recreation, the industry measures are:

***Figure A4-1:*** **Forest Data Snapshot, 2002**

| Data Type | Dixie | Fishlake | Manti-La_Sal | Total |
|---|---|---|---|---|
| Timber Sales | $5,720,979 | $3,260,868 | $1,427,520 | $10,409,366 |
| Grazing Permits | 174 | 220 | 214 | 608 |
| Recreation | | | | |
| *Lodging Sales* | $10,037,020 | $3,068,272 | $5,517,505 | $18,622,797 |
| *Food Sales* | $6,876,676 | $2,102,169 | $3,780,215 | $12,759,059 |
| *Transportation Sales* | $5,574,497 | $1,704,099 | $3,064,387 | $10,342,982 |
| *Rec. Related Sales* | $3,043,295 | $930,322 | $1,672,946 | $5,646,562 |
| Federal Land Payments | $1,440,620 | $1,108,869 | $1,398,558 | $3,948,046 |
| Seed Gathering Sales | $1,109 | $56,394 | $237,096 | $294,598 |
| Forest Service Employment | 220 | 178 | 159 | 556 |

Employment linkages were measured for the entire Impact Area, as well as each Forest's Impact Area. These are shown in Figures 2B-8 through 2B-15 in *2B—Economic Linkages*. In several cases, a county contained more than one National Forest, but most counties were assigned to just one Forest for the purpose of this analysis. The Utah Governor's Office of Planning and Budget (GOPB) conducted this analysis using the REMI (Regional Economic Model, Inc) Policy Insight© model, and data gathered from the USFS on timber, grazing, recreation, seed gathering, federal land payments, and forest service employment.

## Coefficients Used for Modeling Data on the Dixie, Fishlake, and Manti-La Sal National Forests

Because the process of conducting a direct analysis of the economic linkages of National Forests to surrounding communities is relatively new, it was necessary to use a dynamic approach in collecting and analyzing the data available. Following is a brief description of the methods used for each major data type.

**Timber**

- Coefficient = $0.55 per board foot
  - Method = use average from a sample of three sawmills. The sampled produced coefficients of $0.61, $0.57, and $0.55.

**Grazing**

- Modeled number of permitees on each forest as employees
  - Total Impact Area: 608
  - Dixie: 174
  - Fishlake: 220
  - Manti-La Sal: 214

**Recreation**

- Split recreation category into a number of subcategories, with separate coefficients and model entries for each
- ***Lodging***
  - Coefficient = $6.86 per Visitor Day
- ***Food***
  - Coefficient = $4.70 per Visitor Day
- ***Transportation and Miscellaneous Retail***
  - Coefficient = $3.81 per Visitor Day
    - Method used was to average the coefficient for Transport ($3.39) and Misc. Retail ($4.22)
- ***Recreation Related***
  - Coefficient = $2.08 per Visitor Day

**Federal Land Payments (Forest Service Receipts and PILTs)**

- Modeled directly using information on Forest Service Receipts and Payment in Lieu of Taxes receipts

**Seed Gathering**

- Coefficient = $4.82 per pound
  - Method = use average from a sample of two major seed gatherers. The sample produced coefficients of $6.80 and $2.83.
- Data:
  - We did not have pounds of seeds gathered on the forests, but we did have the dollar amount of permits charged for seed gathering on the forests.
  - The Forest Service charges $0.25 per pound of seed throughout all of Region 4.
  - We derived an estimate of total pounds of seeds permitted by multiplying the dollar amount of permits for each forest by 4 ($0.25 per lb)

**Forest Service Employment**

- Number of employees directly modeled